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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/672,775	09/29/2000	Toshikazu Sato	016910/0467	2266

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EXAMINER

WACHTEL, ALEXIS A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 10/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/672,775

Applicant(s)

SATO ET AL.

Examiner

Alexis Wachtel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 11-17, 20 is/are rejected.
- 7) ☒ Claim(s) 5, 10, 18, 19 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Detailed Action
Claim Objections

1. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Independent claim 1 is directed to a gas reclaiming equipment while claim 3 is directed to a gas insulated equipment.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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4. Claims 1,2,3,4,6,7,9,12,13,15,17 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,164,088 to Moriguchi et al.

Claim 3 does not further limit the structure of the claimed gas reclaiming apparatus.

With regards to claims 1 and 2, Moriguchi teaches a gas reclaiming apparatus comprising: a filter for removing a decomposed gas and a foreign particulate substance from said mixed gas which is sent from said gas insulated equipment wherein the filter has an adsorbent of a chemisorption type which absorbs said decomposed gas (Moriguchi, 202, Col 6, lines 27-33). Examiner notes that an adsorbent especially that of the zeolite kind can function a filter since zeolite is an art recognized molecular sieve.

a gas liquefaction system for reclaiming said mixed gas, wherein said gas liquefaction system liquefies said SF₆ gas of said mixed gas by pressurizing said mixed gas (Moriguchi, Col 6, lines 55-57); a pump (Moriguchi, 103) for sending said mixed gas from said insulated equipment to said gas liquefaction system; a storage tank (Moriguchi, 107) for accumulating a SF₆ liquid obtained with said gas liquefaction system; and a line (Moriguchi, 111) for returning a gas in the gas phase in said gas liquefaction system.

With regards to claims 4 and 11, Moriguchi teaches a gas reclaiming equipment comprising: a first filter for removing a decomposed gas and a foreign particulate substance from said mixed gas which is sent from said gas insulated equipment (Moriguchi, 202, Col 6, lines 27-33). Examiner notes that an adsorbent especially that of the zeolite kind can function a filter since zeolite is an art recognized molecular sieve;

a gas liquefaction system for reclaiming said mixed gas, wherein said gas liquefaction system liquefies said SF₆ gas of said mixed gas by pressurizing said mixed gas (Moriguchi, Col 6, lines 55-57); a pump (Moriguchi, 103) for sending said mixed gas from said gas insulated equipment to said gas liquefaction system; a first storage tank for accumulating a SF₆ liquid obtained by said gas liquefaction system (Moriguchi, 107); a gas separation equipment for separating said SF₆ gas from said mixed gas (Moriguchi, 200a, 200b), and sending said SF₆ gas into said gas liquefaction system, said gas separation equipment provided between said gas insulated equipment and said gas liquefaction system; and a buffer tank (Moriguchi, 102) for storing said mixed gas, said buffer tank provided between said gas insulated equipment and said gas separation equipment.

Per claim 6: The gas reclaiming equipment of claim 4, wherein said buffer tank (Moriguchi, 102) stores said mixed gas when said mixed gas is reclaimed under reduced pressure.

Per claim 7: The gas reclaiming equipment of claim 4, wherein said gas separation equipment includes pressure swing adsorption including an adsorbent with selective adsorption (Moriguchi, Col 8, lines 50-67).

Per claim 9: The gas reclaiming equipment of claim 4, wherein said gas separation equipment has plural separating units (Moriguchi, 200a, 200b) to separate said SF₆ gas from said mixed gas.

Per claim 13: A method of reclaiming insulating gas from a mixed gas of a gas insulated equipment comprising: flowing the mixed gas through a filter to remove

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decomposed gas and foreign particulate substances (Moriguchi, 202, Col 6, lines 27-33). Examiner notes that an adsorbent especially that of the zeolite kind can function a filter since zeolite is an art recognized molecular sieve;

flowing the mixed gas to a gas liquefaction system; liquefying the insulating gas; and returning in the gas phase from the gas liquefaction system to an upstream side of the gas liquefaction system to an upstream side of the gas liquefaction system (Moriguchi, Col 6, lines 55-57).

Per claim 14: further comprising chemisorbing decomposed gas in said filter.

Examiner notes that decomposed gases are inherently retained by the filter.

Per claim 15: The method of claim 13, further comprising flowing said mixed gas through a gas separation unit (Moriguchi, 200a, 200b).

Per claim 17: The method of claim 15, further comprising flowing mixed gas from said gas separating equipment to a storage tank (Moriguchi, 107).

Per claim 20: The method of claim 13, further comprising flowing the mixed gas through a buffer tank (Moriguchi, 102).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,164,088 to Moriguchi et al and US 5,240,471 to Barbe et al.

With respect to claim 8, Moriguchi fails to teach that said gas separation equipment has a second filter with a permeable membrane. Barbe et al teaches that it is known and conventional to employ systems for production of high purity gases that employ both pressure swing adsorption devices and membranes (Col 1, lines 33-37). In view of this teaching it would have been obvious to one of ordinary skill at the time the invention was made to have integrated a membrane with the separation system disclosed by Moriguchi motivated by a reasonable expectation of operational success.

7. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,164,088 to Moriguchi et al and US 5,720,797 to Yates et al.

Moriguchi et al as set forth above fail to teach that said gas separation unit includes an adsorbent having Zeolites with approximately 5Å size and 10Å size, and wherein a ratio of said Zeolites with 5 Å size is more than 80wt% and said Zeolites with 10Å size is less than 20wt%. Yates et al teaches that zeolites are useful as adsorbents for SF₆ and are desirably used within a size range of from 5 Å to about 20Å size. Zeolites adsorbent is disclosed as being advantageously used in amounts effective enough to allow the adsorption cycle to run for the period desired before regeneration of the adsorbent is necessary. The precise amount of adsorbent used will be readily determinable by one ordinary skilled in the art by considering the chosen adsorbents capacity, the desired time period between adsorbent regenerations and the flow rate of the SF₆ stream (Col 2, lines 36-42). In view of this teaching it would have been obvious to one of ordinary skill to have optimized the relative ratios of zeolites having a 5 Å size

and zeolites having a 10 Å size since one of ordinary skill would have recognized that rates of adsorption can be adjusted as desired by adjusting ratios of zeolite sizes.

Prior Art of Record

8. US 5,730,779; US 5,502,969; US 5,482,539; US 5,455,016;
US 3,210,952; US 3,675,392; US 3,361,532; US 3,992,159;
US 4,274,851; US 4,975,259; US 5,051,114; US 5,417,742;
US 5,252,219; US 5,378,263; US 4,283,212

Allowable Subject Matter

9. Claims 5,10,18,19 and 21 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 5 and 21, no prior art has been found to teach or suggest the desirability of including an adsorbent in the buffer tank.

No prior art has been found to teach or suggest per claim 10: the gas reclaiming equipment further comprising: a second storage tank storing a specified gas separated by said gas separation equipment, said storage tank including an adsorbent to adsorb said SF₆ gas.

No prior art has been found to teach or suggest per claim 18: the method wherein said storage tank includes an adsorbent to adsorb decomposed gas.

No prior art has been found to teach or suggest per claim 19: the method wherein said storage tank includes an adsorbent to adsorb SF₆ gas

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Wachtel whose telephone number is 571-272-

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1455. The examiner can normally be reached on 10:30am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Glenn Caldarola, can be reached at (571)-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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